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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,764	09/27/2005	Alexander Dardin	278069US0PCT	1825
22850	7590	09/04/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
VASISTH, VISHAL V				
ART UNIT		PAPER NUMBER		
1797				
NOTIFICATION DATE		DELIVERY MODE		
09/04/2008		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/550,764

**Applicant(s)**

DARDIN ET AL.

**Examiner**

VISHAL VASISTH

**Art Unit**

1797

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/88)
- Paper No(s)/Mail Date See Continuation Sheet
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

Continuation of Attachment(s) 3. Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :9/27/2005,3/15/2007 and 4/17/2008.

**DETAILED ACTION**

***Specification***

1. The disclosure is objected to because of the following informalities: the specification on page 10, formula (III) and page 19, formula (III) is written in a form that is difficult to understand where the elements/compounds are bonded. This is especially the case for X and R<sup>7</sup> which seem to be bonded to each other but it is difficult to interpret where the second bond of X is represented. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. See above regarding formula (III) of claim 1. Formula (III) is interpreted by the examiner wherein the carboxyl group is bonded to the X compound which in turn is bonded to R<sup>7</sup>, wherein R<sup>7</sup> is not a part of the repeating unit.

Claim 9 is rejected because it depends from claims 1 and 8 and describes a value for m, however, m is not referred to in any of the previous claims or formulas. The examiner is of the position that m and n represent the amount of each segment in a mixture that comprises the block copolymer.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

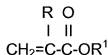
5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pappas et al., US Patent No. 3,816,314 (hereinafter referred to as Pappas).

Regarding claims 1, Pappas discloses block copolymers comprising an oil-soluble (hydrophobic) segment and a polar segment (see Abstract). The block copolymer is prepared by block polymerization of a first acrylic comonomer A, and a second nitrogen-containing comonomer B (Col. 3/L. 5-10). Comonomer A is selected from acrylates having the formula:

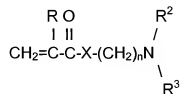


wherein R is hydrogen or a C<sub>1</sub> to C<sub>4</sub> alkyl group and R<sup>1</sup> is a C<sub>8</sub> to C<sub>22</sub> alkyl group.

Comonomer A overlaps with Formula (II) of claim 1 R of comonomer A is hydrogen and so are R<sup>5</sup> and R<sup>6</sup> in formula (II) of claim1 and R<sup>4</sup> is an alkyl radical having from 6 to 30 carbon atoms (which overlaps with R<sup>1</sup> is a C<sub>8</sub> to C<sub>22</sub> alkyl group). Comonomer A can be 2-ethylhexyl methacrylate (Col 3/L. 17-35), which is also taught by the instant

specification as an example of monomers that represent formula (II) of claim 1 on page 14, line 5 of the instant specification.

Comonomer B is selected from a group of nitrogen-containing monomers, preferably from acrylic compounds having the formula:



wherein R is as above, X is oxygen or an -NR- group, n is a whole number from 2 to 5, and R<sup>2</sup> and R<sup>3</sup> are each C<sub>1</sub> to C<sub>12</sub> alkyl group (Col. 3/L. 36-51). An example of a compound that adheres to the comonomer B formula is diethylaminopropyl methacrylamide (Col. 3/L. 52-60), which overlaps with formula (III) of claim 1 wherein X of formula (III) is a NR<sup>8</sup> group in which R<sup>8</sup> is hydrogen and R<sup>7</sup> is a group comprising 2 to 1000 carbon atoms and having at least one heteroatom which can be nitrogen (page 22, line 14-16 of the instant specification), and when n is greater than or equal to 3.

The block polymers of Pappas comprise from about 99.75 to about 90 mole percent of comonomer A units and from about 0.25 to about 10 mole percent of comonomer B, preferably having a molar ratio of A to B between 99:1 to 95:5. Based on the molar ratio and on the molecular weight of an example of comonomer A (2-ethylhexyl methacrylate) being about 198 g/mol and the molecular weight of an example of comonomer B (diethylaminopropyl methacrylamide) being about 200 g/mol, there are overlapping ranges for components (b) of claim 1 with comonomer A (from 50 to 100 wt%) and the polar segment of claim 1 with comonomer B.

The block copolymers of Pappas can be used in lubricating oils (base oil as recited in claim 1), wherein the block copolymer have dispersant regions absorb sludge thereby reducing friction (Col. 5/L. 34-45).

Regarding claims 2 and 3, comonomer B, diethylaminopropyl methacrylamide, is characterized by  $R^7$  being a group comprising an  $-NR^8R^8$  in which the  $R^8$  radicals include hydrogen or a group having from 1 to 20 carbon atoms (as recited in claim 2) and that the X group in the compound being NH (as recited by claim 3) (Col. 3/L. 52-60).

Regarding claim 4, based on the structure of diethylaminopropyl methacrylamide, there are 3 heteroatoms and 11 carbon atoms, which is within the range of 1:1 to 1:5 of heteroatoms to carbon atoms (Col. 3/L. 52-60).

Regarding claims 5 and 6, comonomer B, diethylaminopropyl methacrylamide (which is an aminoalkyl (meth)acrylamides - as recited in claim 6), is characterized by  $R^7$  having 7 carbon atoms which is within the range of  $R^7$  comprising at most 10 carbon atoms (Col. 3/L. 52-60).

Regarding claim 7, see formula above for comonomer B wherein R is a methyl group,  $R^2$  and  $R^3$  are methyl groups instead of ethyl groups as disclosed by the example of comonomer B as discussed above and n is equal to 3 (Col. 3/L.36-60).

Regarding claims 8 and 9, the block copolymer composition of Pappas is a diblock as represented by the comonomer A and comonomer B which are combined in a mixture (as recited in claim 8) (Col. 5/L. 55-64) and therefore m and n are each independently 1 (as recited in claim 9).

Regarding claims 10 and 11, both comonomer A (polar segment D as recited in claim 11) and comonomer B (hydrophobic segment P as recited in claim 10) have an average number of monomeric units in the polymer from about 100 to 3,000 (Col. 4/L. 21-33). Based on the disclosed degree of polymerization and the molecular weight for comonomers A and B as discussed above there is an overlap between the ranges recited and the weight-average degree of polymerization in Pappas.

Regarding claim 12, see discussion above.

Regarding claim 13, the block copolymer of Pappas can be used as a sole additive, or in combination with other additives such as; pour point depressants, corrosion inhibitors, antioxidants and sludge inhibitors, etc. (Col. 8/L. 21-25).

Regarding claim 14, the block copolymer of Pappas, can be used in lubricating oils in amounts of about 0.5 to 5.0 weight percent based on the total weight of the oil (present in particular from an amount from 0.01 to 50 wt%) (Col. 5/L. 34-38).

Regarding claim 17, the block copolymers of Pappas may be employed in lubricating oils (Col. 5/L. 34-39), although the type of lubricating oil is not disclosed, it would have been obvious to employ the block copolymer of Pappas in any lubricating oil including gear, motor, hydraulic or grease composition.

#### ***Claim Rejections - 35 USC § 103***

7. Claims 1-6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roos et al., US Patent no. 6,348,554 (hereinafter referred to as Roos).

Regarding claims 1-6, Roos discloses a method of preparing a liquid polymer composition and the use of the composition. The composition comprises a base oil



(Col. 12/L. 38-50) and a polymer composition comprising 60 to 100% by weight of 2-ethylhexyl methacrylate (Col. 4/L. 8 and Col. 6/L. 16-67) and 0 to 40% by weight of another comonomer which includes N,N-dimethylaminopropyl methacrylate (Col. 7/L. 21-25 and Col. 15/Table 1).

Regarding claim 15, Roos discloses a method for preparation of a liquid polymer composition, where ethylenically unsaturated monomers are polymerized by means of initiators that have a transferable atom group, and one or more catalysts that contain at least one transition metal, in the presence of ligands that can form a coordination compound with the metallic catalysts, the catalyst is oxidized after the polymerization (see Abstract).

***Claim Rejections - 35 USC § 103***

8. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pappas in view of Roos.

Regarding claim 15, Pappas discloses the use of catalysts for polymerization of block copolymers. Pappas, however, does not disclose polymerization by means of initiators which have a transferable atom group and one or more catalysts having a transition metal in the presence of ligands.

Roos discloses a method for preparation of a liquid polymer composition, where ethylenically unsaturated monomers are polymerized by means of initiators that have a transferable atom group, and one or more catalysts that contain at least one transition metal, in the presence of ligands that can form a coordination compound with the metallic catalysts, the catalyst is oxidized after the polymerization (see Abstract). It

would have been obvious to one of ordinary skill in the art at the time of invention to produce the block copolymer of Pappas by the process of Roos in order to control the constitution of the polymer (Col. 1/L. 33-35).

***Claim Rejections - 35 USC § 103***

9. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roos in view of Benicewicz et al., US Patent No. 6,458,968 (hereinafter referred to as Benicewicz).

Regarding claim 16, Roos discloses the use of carboxylic ester as initiators in the polymerization of the polymer composition (Col. 8/L. 9-15). Roos, however, does not disclose the presence of dithiocarboxylic ester during polymerization.

Benicewicz discloses the preparation of dithiocarboxylic esters and uses thereof. Benicewicz describes the use of dithiocarboxylic esters in a method of polymerization where polymers that have a narrow molecular weight distribution may be obtained (Col. 1/L. 15-44). It would have been obvious to one of ordinary skill in the art at the time of the invention to use dithiocarboxylic esters in the polymer composition of Roos in order to obtain narrow molecular weight distributions (Col. 1/L. 15-17).

***Conclusion***

10. There were unused X and Y references from the international search report. The references above disclose all of the claimed elements.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VISHAL VASISTH whose telephone number is (571)270-3716. The examiner can normally be reached on M-R 8:30a-5:30p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571)272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ellen M McAvoy/

Primary Examiner, Art Unit 1797

VVV

